

## Terrestrial Plume Impingement Testbed, Phase I

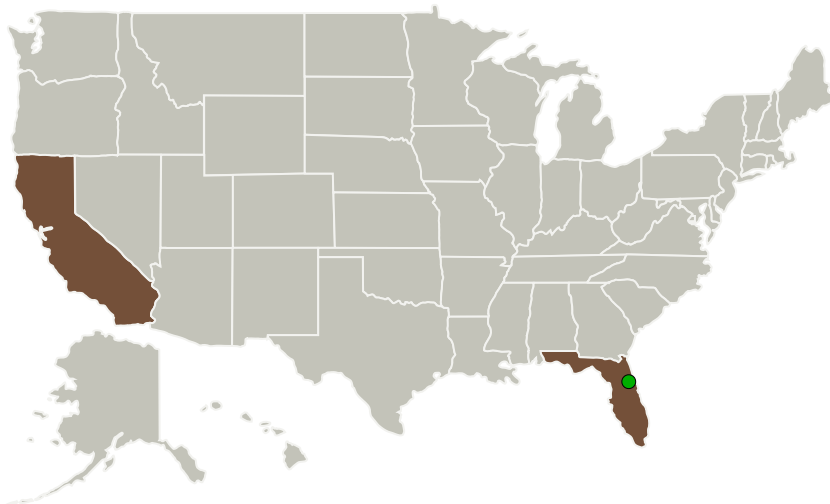
Completed Technology Project (2011 - 2011)



## Project Introduction

Masten Space Systems proposes to create a terrestrial plume impingement testbed for generating novel datasets for extraterrestrial robotic missions. This testbed would allow rocket plume interactions with lunar, martian, and asteroid surface simulants in a fully instrumented, easy to access, and low cost environment using Masten Space's existing VTVL suborbital launch vehicles. The testbed will allow entry, descent and landing groups both inside and outside of NASA a low cost way of testing in situ regolith surface treatment, plume deflection, and ground effect mitigation technologies. The testbed will be optimized for testing ISRU based methods for launch/landing pad manufacturing such as optimal "paver" size and shape, life cycle management for pad materials, size and shape of hardened regolith bricks, and manufacturing methods. Phase I will include surveying potential users for requirements, conducting one simple "bench" test to validate those requirements, and documenting an initial testbed design in anticipation of a Phase II proposal. During Phase I the testbed itself will go from TRL 2 to 5. Additionally the single bench test article will go from 3 to 6.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Masten Space Systems, Inc	Lead Organization	Industry	Mojave, California
● Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations	
California	Florida

## Project Transitions

**February 2011:** Project Start**September 2011:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138535>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Masten Space Systems, Inc

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

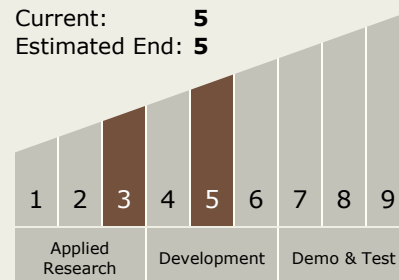
Carlos Torrez

**Principal Investigator:**

Reuben Garcia

## Technology Maturity (TRL)

Start: 3  
Current: 5  
Estimated End: 5



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## Technology Areas

### Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.6 Human Systems Integration
    - └ TX06.6.5 Integrated Systems Safety

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System